

## NOTES ON *MASCAGNIA* IN SOUTH AMERICA

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The genus *Mascagnia* is one of the most diverse in the Malpighiaceae. One repeated trend in this group is the reduction or loss of the lateral wings of the samara. Two South American species in which this has occurred are described here as new; in both cases, the closest relative is an undoubted *Mascagnia* with large lateral wings on the samara. The third species treated here is one of the many rare plants endemic to the area of Rio de Janeiro. Study of specimens from Leningrad reveals that the plant originally described in flower as *Banisteria riedeliana* Regel is conspecific with *Mascagnia metallicolor* Niedenzu, which was based on fruiting material.

### *Mascagnia aptera* Anderson, sp. nov.

Fig. 1.

Suffrutex scandens, ramis gracilibus (usque 4 mm diametro) sero glabratis, ramulis velutinis, pilis sessilibus vel subsessilibus, bifurcatis brachiis  $\pm$  rectis, erectis, saepe inaequalibus. Foliorum lamina 2.8-5.8 cm longa, 1.8-5.0 cm lata, late elliptica vel suborbicularis, basi cordata, margine revoluta, apice rotundata apiculataque, coriacea, supra rugosa et velutina pilis sessilibus, bifurcatis, brachiis rectis erectisque, subtus dense albo-lanata pilis sessilibus, brachiis longis, mollibus, subrectis vel tortis, appressis vel parum patentibus, subtus utrinque 3-4 glandulas planas immersas in serie 0.5-3.5 mm ab margine distantis gerens, costa, utrinque 5-6 nervis lateralibus, et venis tertiariis parallelis supra impressis, subtus prominentibus; petiolus 2-5 mm longus, velutinus, basi vel supra basim biglandulifer; stipulae 0.4 mm longae, anguste triangulares, rubrae, abaxialiter velutinae, adaxialiter glabrae, ramulo inter petiolos portatae. Folia sub racemis distalibus minoria. Racemi axillares, 2.0-3.5 cm longi, velutini, pedunculo inflorescentiae 6-15 mm longo, floribus 6-14 confertis, bracteis 1-2 (-3) mm longis, anguste triangularibus vel linearibus, velutinis, eglandulosis vel duabus proximalibus basaliter biglanduliferis, pedunculo florifero 4.0-5.5 mm longo, velutino, parum sub apice 2 bracteolas suboppositas gerenti, bracteolis velutinis, inaequalibus, minore 1.0-1.5 mm longa, recta, angustissime lineari vel subulata, eglandulosa, majore 1.5-2.0 mm longa, falcata, uno latere laminari et glandulam magnam gerenti, altero lineari eglanduloso. Pedicellus 2.5-4.5 mm longus (fructu usque 5.5 mm), piloso-sericeus, apice parum tumidus. Sepala libera, late ovata vel triangularia, apice obtusa vel rotundata, glandulas 0.5-1.0 mm superantia, appressa, abaxialiter laxe piloso-sericea, adaxialiter glabra, anticum eglandulosum, 4 lateralia biglandulifera, glandulis ca 2 mm longis, obovatis. Petala rubo-rosea, glabra, dorsaliter alulata alula 0.4 mm lata (alula petali postici minus prominenti); petala 4 lateralia patentia vel reflexa, ungue 1.0-1.2 mm longo, limbo 4.8-5.0 mm longo, 3.0-3.5 mm lato, late elliptico vel orbiculari, margine eroso vel denticulato, concavo vel convexo; petalum posticum erectum, ungue 1.5 mm longo, limbo 5.5 mm longo, 3.0 mm lato, oblongo, margine proximaliter denticulato, distaliter fimbriato, plano vel corrugato. Stamina 10 filamenta glabra, fere libera (basi brevissime connata), 5 interiora (sepalis opposita) 2.5 mm longa, 5 exteriora (petalis opposita) 2.1 mm longa, recta vel distaliter parum reflexa; antherae glabrae, subaequales, 1.3-1.5 mm longae, loculis 4 linearibus aequalibus pendulis, 5 petalis oppositae apice

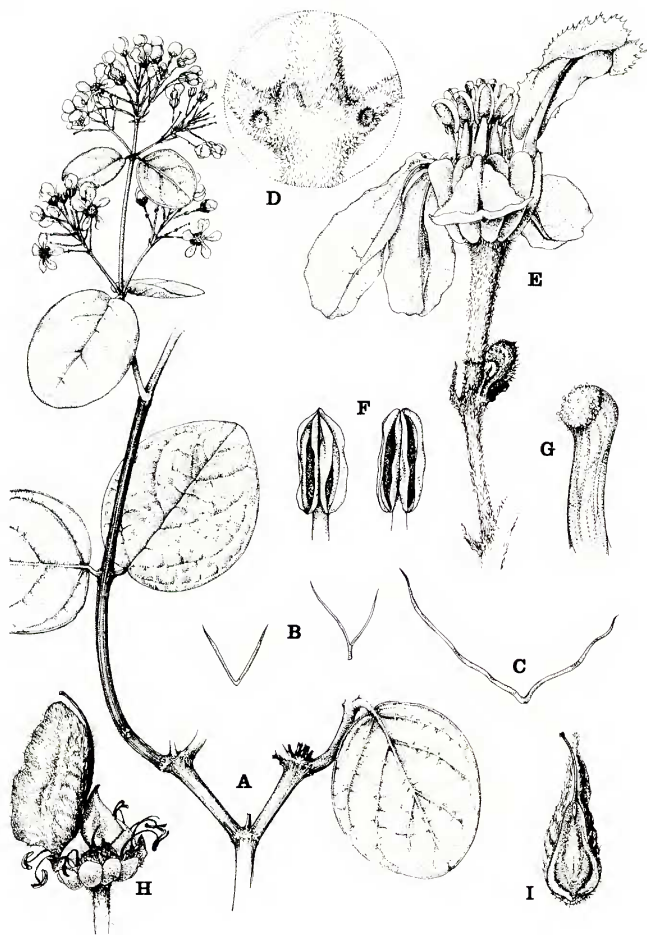


FIG. 1. *Mascagnia aptera*, drawn from the type by Karin Douthit. A, flowering branch  $\times 0.7$ ; B, hairs from adaxial surface of leaf  $\times 50$ ; C, hair from abaxial surface of leaf  $\times 50$ ; D, node with stipules and petiolar glands  $\times 7$ ; E, flower  $\times 7$ ; F, anthers, left opposite petal, right opposite sepal,  $\times 17.5$ ; G, stigma  $\times 42$ ; H, fruit with 2 samaras removed to show pyramidal torus  $\times 5.6$ ; I, samara, ventral view,  $\times 5.6$ .

brevi-apiculatae. Ovarium sphaeroideum, 1.2 mm altum, 1.3 mm diametro, laxe pilososericeum; styli 3,  $\pm$  aequales, 2.5 mm longi, graciles, glabri, parum patulo-arcuati, antheras superantes, apice interne stigmatiferi et dorsaliter rotundati. Fructus albo-tomentosus vel pilosus, ex 3 (vel abortu 2-1) "samaris" alutatis in toro pyramidalis 1.2-1.7 mm alto portatis constans. Samarae nux 3.5-4.0 mm longae, 2 mm diametro, obpyriformis, lateribus nervosis, areola ventrali ovata ca 3.5 mm alta; alae laterales nullae, utrinque in nervo crasso longitudinali reductae; ala dorsalis 0.5-1.5 mm lata, ex basi nucis super apice ad basim styli persistentis extensa, membranacea, integra vel repanda.

BRAZIL. Mato Grosso: Road Buriti to Cuiabá, rocky escarpment of Chapada dos Guimarães, amongst sandstone rocks, elev. 720 m, 22 Oct 1973 fl/imm frt, G. T. Prance, E. Lleras, & D. F. Coelho 19274 (INPA, holotype; MICH, isotype).

The fruits of *Mascagnia aptera* have completely lost the lateral wings that are the most important diagnostic character of the genus *Mascagnia*. Nevertheless, in all other respects this species is typical of the genus; in fact, it is very similar to *Mascagnia cordifolia* (Adr. Jussieu) Griseb. They are easily distinguished in fruit, because each samara of *M. cordifolia* is 2-3 cm in diameter with well-developed lateral wings. Flowering specimens of the two species can be distinguished on the following bases: *M. cordifolia* is a vigorous twining vine, often climbing to 2 m or more; *M. aptera* was described by the collectors as a "scandent subshrub," and the specimens give the impression of a twiggy plant that may have largely abandoned the climbing habit, as is not uncommon in open rocky places like the Chapada dos Guimarães. The largest leaves of *M. cordifolia* are usually larger (7-10 cm long, 6-10 cm wide) and less coriaceous than in *M. aptera*. The leaves are velutinous on both sides in *M. cordifolia*, whereas in *M. aptera* they are velutinous on the adaxial side and woolly on the abaxial side. The stipules are larger and more prominent in *M. cordifolia* than in *M. aptera*. *Mascagnia aptera* is probably a local endemic derived from *M. cordifolia* with one major adaptive change and accumulated minor vegetative differences.

***Mascagnia mirabilis* Anderson, sp. nov.**

Fig. 2.

Liana lignosa, ramis glabris fistulosis 8 mm diametro. Foliorum lamina 21.0-22.5 cm longa, 11.5-13.5 cm lata, late ovata, basi obtusa, apice abrupte breviacuminata, utrinque glabra, eglandulosa, nervis lateralibus utrinque 8-9 subtu supraque prominentibus, venis tertiariis  $\pm$  scalariformibus prominulis; petiolus 32-36 mm longus, glaber, 6 mm sub apice biglandulosus, glandulis 3 mm longis; stipulae non visae. Inflorescentia axillaribus, panicula decomposita 28 cm longa et 26 cm diametro, tomentosa vel subvelutina, floribus in verticillis 4-floris portatis, bracteis 0.7-1.5 mm longis latisque, triangularibus, eglandulosis, abaxialiter tomentosis, adaxialiter glabris, persistentibus, pedunculo 3-8 mm longo, subvelutino, bracteolis ca 0.8 mm longis latisque, ovatis, abaxialiter tomentosis, adaxialiter glabris, 1 bracteola 1 glandulam magnam excentricam gerenti, apice pedunculi portatis, persistentibus. Pedicellus 3-6 mm longus (-8 mm in fructu), apice tumidus ca 3.5 mm diametro, subsericeus. Sepala omnia 2 glanduloso circularibus 1.5-2.0 mm diametro munita (minoribus in sepalo antico), 1.5-2.0 mm longa ultra glandulas, 2.0-2.6 mm lata, late rotundata, abaxialiter sericea, adaxialiter glabra, per anthesin appressa. Petala lutea, glabra, exposita in alabastro accrescenti, 4 lateralia patentia vel reflexa, limbo 4.5 mm longo, 5.0-6.0 mm lato, transverse late elliptico, subintegro vel denticulato et eglanduloso vel in 2 posterioribus basi aliquot glandulis parvis et sessilibus munito, ungue 1.8-2.3 mm longo; petalum posticum erectum, limbo 5.5-6.5 mm longo, 6.0-7.0 mm lato, glanduloso-fimbriato toto circuito vel apice eglanduloso-fimbriato, ungue 3.0-3.5 mm longo. Filamenta glabra, libera vel basi brevissime connata, 5 petalis opposita 2.0-2.4 mm longa, recta et  $\pm$  erecta, 5 sepalis

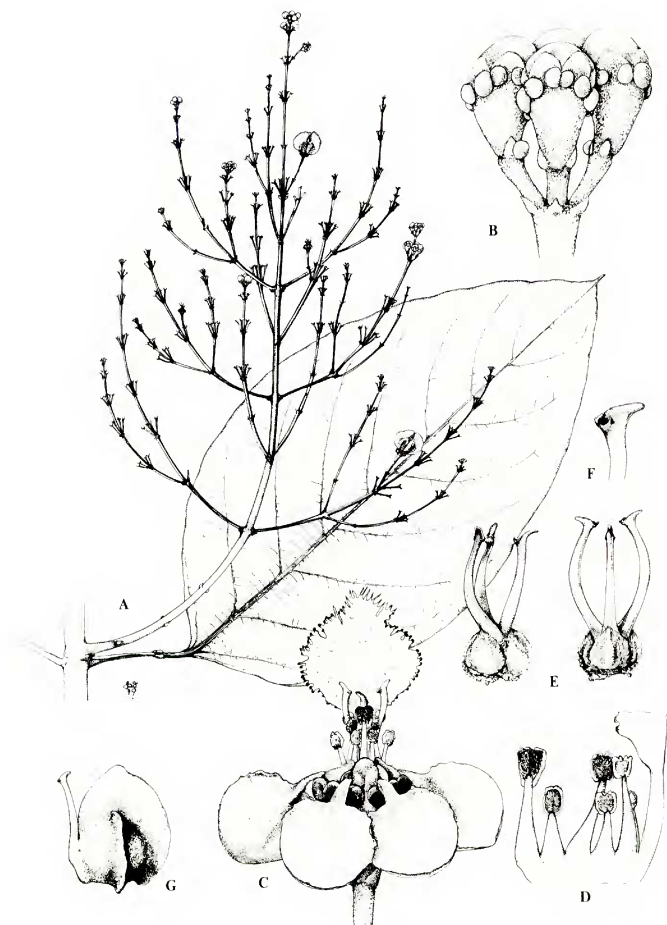


FIG. 2. *Mascagnia mirabilis*, drawn from the type by Karin Douthit. A, inflorescence and leaf  $\times 0.5$ ; B, umbel of 4 flower buds  $\times 3.5$ ; C, flower  $\times 3.5$ ; D, portion of androecium, opened out, with base of posterior petal for orientation, the stamen to left opposite anterior sepal,  $\times 5$ ; E, gynoecia, left a side view with anterior style to right, right an anterior view with anterior style in center,  $\times 5$ ; F, apex of style  $\times 10$ ; G, samara  $\times 2.5$ .

opposita 3.3–3.5 mm longa, 2 sepalis antico-lateralibus opposita versus petalum posticum inclinata, 3 cetera recta et erecta; antherae glabrae, 0.9–1.6 mm longae, ea petalo postico opposita minima, ea sepalo antico opposita maxima. Ovarium 1.5 mm altum, sericeum; styli glabri, apice dorsaliter longe uncinati unco 0.3–0.5 mm longo, anticus 3.7–4.3 mm longus, rectus et erectus, 2 postici 4.5–5.0 mm longi, sigmoidei et versus petalum posticum inclinati. Samara paulo immatura sericea, nuce 4–6 mm diametro, alis lateralibus reductis 1–2 mm latis, distinctis apice basique, integris, ala dorsali 3–4 mm lata, 8–10 mm alta, apice producta et nucem amplectenti.

PERU. San Martín: liana in open thickets, road from Puente Colombia to Shapaja, along Río Mayo, elev. 280 m, 30 Apr 1976 fl/imm frt, *T. Plowman 6019* (MICH, holotype).

This species is most closely related to *Mascagnia macrophylla* Rusby, which is known only from two Bolivian collections. Both species belong in a group including *M. hippocrateoides* (Tr. & Pl.) Nied. and *M. platyrachis* (Tr. & Pl.) Cuatr., of Colombia and Ecuador, and *M. hiraea* (Gaertn.) F. & R. of Jamaica. Like *M. macrophylla*, *M. mirabilis* has very large, glabrous leaves with long glabrous petioles. They are both notable for their whorls of four flowers along the ultimate axes of the inflorescence. However, the samara of *M. macrophylla* has large, membranous lateral wings, ca 3 cm wide and 5 cm high, whereas in *M. mirabilis* the lateral wings are reduced to rudimentary winglets 1–2 mm wide and the dorsal wing has become dominant. This situation is analogous to that in *M. aptera* and *M. cordifolia*, except that *M. mirabilis* and *M. macrophylla* are otherwise almost identical, while *M. aptera* differs from *M. cordifolia* in vegetative characters as well as characters of the fruit. Note that Cuatrecasas (Webbia 13(2): 374. 1958) justified recognizing *M. platyrachis* on the basis of a similar but less extreme reduction of the wings of the samara.

*Mascagnia macrophylla* Rusby (Mem. New York Bot. Gard. 7: 272. 1927) was typified by two collections, *Cárdenas 1943* (flr, NY!) and *Cárdenas 2044* (frt, NY! MICH!). The NY sheet of *Cárdenas 2044* is here designated lectotype.

*Mascagnia mirabilis* is known only from the type. It is named for its extraordinary fruit and inflorescence.

***Mascagnia riedeliana*** (Regel) Anderson, comb. nov.

*Banisteria riedeliana* Regel, Ind. Sem. Hort. Bot. Petropol. 17. 1855.

*Mascagnia metallicolor* Niedenzu, Arb. Bot. Inst. Lyc. 3: 20. 1908.

Fig. 3.

Woody vine; youngest stems sericeous, without lenticels; older stems glabrate, fissured and punctate, with both elongated and punctiform lenticels. Lamina of the larger leaves 9.5–18.5 cm long, 4.5–8.0 cm wide, elliptical or somewhat ovate, cuneate to rounded at the base, flat at the margin, acute or more commonly gradually to abruptly acuminate at the apex, sericeous to soon or eventually glabrate above, densely and persistently metallo-sericeous below, eglandular or, frequently on the same branch, bearing several small marginal glands on the proximal half, the reticulum prominent on both sides; petiole 8–14 mm long, sericeous to glabrate, eglandular or occasionally bearing 1–2 small glands near the apex; stipules 0.4–1.0 mm long, triangular, borne on stem near base of petiole. Inflorescence a sericeous, usually compound, axillary or terminal panicle containing deciduous bracts, the flowers ultimately borne decussate in pseudoracemes 1–4 cm long of 6–20 flowers; floriferous bracts 1.5–2.5 mm long, narrowly triangular, eglandular, persistent in fruit; peduncle 1.7–3.5 mm long; bracteoles 0.5–1.0 mm long, triangular, eglandular, borne at the apex of the peduncle, persistent. Pedicel 3–6 mm long (–8 mm in fruit), sericeous. Sepals leaving the outer petal exposed during enlargement of the bud, 2.0–2.5 mm long, 1.6–2.0 mm wide, appressed in

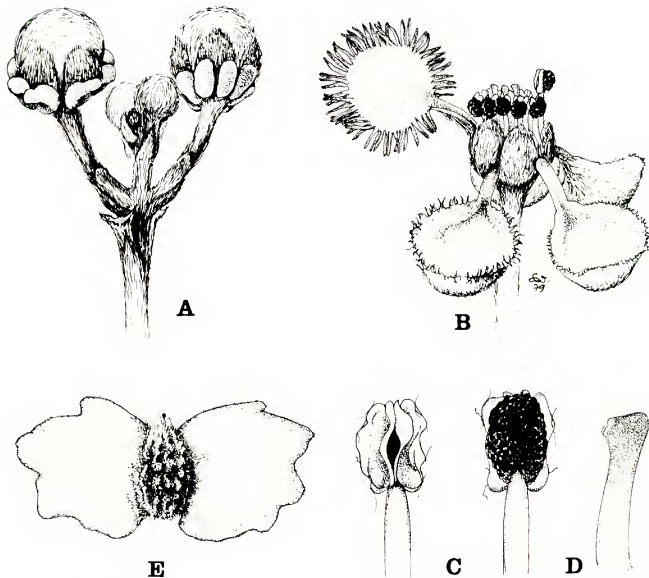


FIG. 3. *Mascagnia riedeliana*. A, ultimate branch of inflorescence  $\times 5.6$ ; B, flower  $\times 5.6$ ; C, anthers  $\times 16$ ; D, stigma  $\times 16$ ; E, samara, dorsal view,  $\times 1.6$ . Drawn by Karin Douthit, A from the holotype, B-D from another cultivated collection from LE, E from *Angeli* 263.

anthesis, broadly rounded at the apex, abaxially densely sericeous except the membranous margin, adaxially glabrous, all eglandular or the lateral 4 biglandular with the glands 1.5–2.3 mm long and free and revolute at the apex or all around the margin. Petals very densely golden- or silvery-sericeous abaxially on claw and limb except toward margin, the lateral 4 reflexed, with the claw 2.0 mm long and the limb 3.5–5.0 mm long, 4.0–5.0 mm wide,  $\pm$  deeply concave (especially the anterior 2), dentate (the anterior 2) to fimbriate (the posterior 2); posterior petal  $\pm$  erect, with the claw 2.0–2.5 mm long and the limb 4.5–5.5 mm long, 4.5–5.0 mm wide, flat or slightly concave, glandular-fimbriate all around the margin, the fimbriae ca 1 mm long. Filaments 2.0–3.5 mm long, longest opposite the anterior sepal, shortest opposite the posterior petal, abaxially sericeous on the proximal 1/2, adaxially glabrous, straight, connate up to 1 mm; anthers 1.0–1.3 mm long, bearing a few spreading hairs on the locules, the connective black, glandular, swollen but not exceeding the locules. Ovary 1.3 mm high, sericeous; styles 2.0–2.4 mm long, subequal, glabrous, diverging at the base, laterally flattened, dorsally rounded or truncate or slightly apiculate at the apex, with internal stigmas. Samara with the nut 5–7 mm wide and 9 mm high, tomentose, bearing between the 2 lateral wings ca. 5 parallel  $\pm$  dissected winglets 1.0–2.5 mm wide; lateral wings discrete, 11–15 mm wide, ca. 15 mm

high, erose and often with irregular shallow lobing, loosely sericeous; ventral areole linear, 7–8 mm long, 1.5 mm wide.

Type. Cultivated in Hort. Petropol. from seeds sent by Riedel from Rio de Janeiro, Brazil (holotype LE!).

BRAZIL. Rio de Janeiro: Estr. da Vista Chinesa, próximo à Est. Biol., May frt, *Angeli* 263 (MICH); Jard. Bot. cult., Feb flr, *J. Kuhlmann* [RB 47963] (RB); Copacabana, *Riedel* 80 in 1832 (GH, LE, W).

Leningrad has an extensive series of specimens of this species, several apparently collected by Riedel in Rio de Janeiro, the rest cultivated in the Petersburg Botanical Garden. All are sterile or in flower, which is peculiar since Riedel sent seeds, according to Regel's protologue. Identifying one of the Leningrad sheets as Regel's holotype turns out to be surprisingly easy, because Regel described the sepals as bearing glands and only one sheet at LE has glanduliferous sepals. It is also the only sheet labeled "Banisteria Riedeliana H. Petrop.," which matches the protologue, and the only sheet annotated "v. v. Rgl." [vidi vivam Regel]. I do not know whether or not the label was written by Regel.

Regel described the petals as four and the stamens as eight. They are actually five and ten, respectively, in all specimens seen, including the type.

*Mascagnia riedeliana* belongs in the group of species that includes *M. chlorocarpa* (Adr. Jussieu) Grisebach, *M. polycarpa* Brandegee, and the plant described as *Diplopterys microcarpa* Sandwith, which will be transferred to *Mascagnia* in my paper on the Malpighiaceae of the Guayana Highland (Memoirs N. Y. B. G., in press).

Niedenzenz based his description of this species in *Das Pflanzenreich*, under *Banisteria riedeliana*, on *Peckolt* 266 from Cantagalo. That plant is not referable to this species. It seems to be an undescribed species, for which the proper genus is not obvious. It will be treated in a future paper.